BY ORDER OF THE COMMANDER
AIR FORCE MATERIEL COMMAND

AIR FORCE INSTRUCTION 21-103

AIR FORCE MATERIEL COMMAND
Supplement

ADDENDUM_J

14 SEPTEMBER 2016

Maintenance

EQUIPMENT INVENTORY, STATUS AND UTILIZATION REPORTING SYSTEM/C-17 MINIMUM ESSENTIAL SUBSYSTEM LIST (MESL)

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFI 21-103_AFMCSUP, ***Equipment Inventory, Status and Utilization Reporting***. It establishes guidance and assigns responsibility to provide AFMC Test Fleet aircraft status changes/updates in accordance with (IAW) current maintenance conditions and the developed MDS specific mission essential subsystem list (MESL). This instruction applies to all AFMC organizations that manage or perform maintenance on AFMC owned/possessed aircraft regardless of Air Force Specialty Code. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, ***Management of Records***, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). This publication may be supplemented at any level, but all direct Supplements must be routed to the Office of Primary Responsibility (OPR) of this publication for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-2, T-3") number following the compliance statement. See AFI 33-360, Publications and Forms Management, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance

items. Send comments and suggested improvements to this instruction on AF Form 847, ***Recommendation for Change of Publication,*** to HQ AFMC/A4MM, 462 Chidlaw Road, Wright-Patterson AFB OH 45433-5006.

These MESLs complement AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting.* They apply to maintenance activities supporting AFMC test missions across AFMC.

SUMMARY OF CHANGES

This publication has been substantially revised to meet the intent of AFI 21-103 AFMCSUP; this Addendum must be reviewed in its entirety. The MESL is modified based on user inputs and has been updated to reflect current mission requirements. Additionally, removed Tier 1 (T-1) IAW AFI 33-360 dated 1 December 2015, MAJCOM level instruction will not Tier references above the MAJCOM waiver authority (e.g. Table 1.1. Tier Waiver Authorities, Tier T-1 may be used in publications at Departmental level only.).

1.1. **General.** The MESL is the basis of status reporting IAW 21-103. MESLs lay the ground work for reporting the status of assigned/possessed AFMC test fleet aircraft and equipment supporting AFMC test missions. They list the minimum essential systems and subsystems that must work on test fleet aircraft to perform specifically assigned unit test, training, or other missions.

1.2. Qualifying notes are used to: Define system exceptions and help explain complex degraded mission systems.

1.3. It is understood that any aircraft or support equipment system or subsystem may: Be subjected to test or tested under a test scenario and/or are test dependent as directed by the test mission director. If identified by test mission director, those systems or subsystems, if not already identified by qualifying notes, must be operational to be considered FMC or PMC for that mission.

2.1. Reading the MESL. A MESL is read by comparing the systems stated by WUC column (column 2) against the Full Systems List (FSL) and all applicable Basic Systems List (BSLs) across the page (DTE - Developmental Test and Evaluation, DTS - Developmental Test Support). Each unit's Design Operational Capability (DOC) statement determines applicability of BSL columns. The aircraft or equipment MESLs incorporate all AFMC assigned/possessed aircraft/equipment and therefore it is important to compare only the columns listed in the MESL which are applicable to the units assigned/possessed aircraft. For example, units with training (TF) coded aircraft would determine report status using only the FSL and TNG columns. Units with multiple coded aircraft will ensure status is reported using the MESL columns appropriate to the individual aircraft/equipment assignment code or type mission being flown. (T-2).

Table 2.1. C-17 Mission Essential Sub-Listing (MESL).

13-May-16							
Reference Designator	**Item/System**	**Installed**	**Required**	**Full System List (FSL)**	**Basic System List (BSL)**		**MESL**
					DTE	**DTS**	
21	AIR CONDITIONING/PRESSURIZATION						
21-22	Cargo Compartment Recirculation Fan	1	1	X	X	X	Will be operable if one pack is inop
21-22	AC Supply Check Valve, Cargo Compt	4	2	X			One per side required, inop valve will be closed
21-22	Environmental System-Fire Detection Control Panel	1	1	X	X	X	If ESP is SINGLE (one channel is lost) a ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
21-22	Environ Control Panel APU Air Switch	1	1	X			Required if no air cart available for engine start
21-22	Cargo Compartment Redistribution Fan	1	0	X	X	X	Required for Aerial Bulk Fuel Delivery System and Dispensing System Operations
21-26	Avionics Cooling Fan	3	2	X			These requirements cover the Avionics Cooling Check Valve. 3 required for airdrop above 25K feet.
21-26	Avionics Cooling Fan Check Valves	3	3	X			
21-26	Avionics Ground Cooling Inlet Filter Assembly	1	1	X			Will have filter installed for ground operation of avionics equipment
21-26	Avionics Cooling	2	1	X			

	Differential Pressure Sensor						
21-26	Avionics Cooling Inflow Valve	1	0	X			
21-26	Ground Inlet Shutoff Valve	1	0	X			Will be manually closed for flight if inop
21-26	Avionics Cooling Skin Heat Exchanger Check Valve	1	0	X			Will have air conditioning pack operating for ground ops. Valve will be manually locked open if inop.
21-26	Avionics Cooling Equipment Air Shutoff valve Assembly	10	0	X			Valve required to be closed if corresponding avionics equipment is not installed
21-27	Cargo Compartment Exhaust Fan	2	0	X			
21-29	Ram Air Ventilation Valve	2	0	X			Both packs will be operational if inop
21-31	Cabin Pressure Outflow Valve	1	1	X	X	X	These requirements include the Outflow Valve DC Actuator.
21-31	Cabin Pressure Controller	2	1	X			These requirements include Cabin Pressure Sensor and AC Outflow Valve Motor. One complete cabin pressure system will be operational.
21-31	Cabin Pressure Selector Panel	1	1	X	X	X	
21-33	Cabin Pressurization Panel Indicator Unit	1	1	X	X5	X	Two of three indicators in panel will be operational. Cabin altitude gauge must be operational.
21-33	Cabin Differential Pressure Sensor	1	1	X			Two of three indicators in panel will be operational.

21-33	Cabin Pressure Gauge (crew entry door)	1	1	X			
21-33	Cabin Differential Press. Indicator (cockpit)	1	1	X			Two of three indicators in panel will be operational. Cabin altitude indicator must be operational.
21-33	Cabin Altitude Rate of Climb	1	0	X			Two of three indicators in panel will be operational. Cabin altitude indicator must be operational.
21-33	10000 Ft Pressure Warning Aneroid Switch	1	1	X			One-time flight below 10K ft may be approved IAW 00-20-1 (para 4.7).
21-33	Cabin Altitude Indicator	1	1	X			
21-34	Positive Pressure Relief Valve	3	2	X			These requirements include the Positive Pressure Relief Valve Filter Assembly.
21-34	Negative Pressure Relief Doors	3	2	X			Door can be stuck closed but must be installed
21-42	Ramp Floor Heater/ Blower	2	2	X			
21-50	Air Conditioning Pack	2	2	X	X6	X	One complete Air Conditioning Pack system must be fully operational for flight. Both packs required for takeoff into known icing conditions, or any AEROMED mission.
21-53	HI Flow On Switch	1	0	X			Avionics Cooling Override Switch will be operational if HI-Flow Switch is inop

21-53	Remote Temp Control Switch	1	0	X			Loadmaster Temp Control Selector will be operational if Remote Temp Controller Switch is inop
21-53	Inlet Air Temperature Sensor	6	3	X			One sensor per zone will be operational
21-53	Zone Temperature sensor	6	3	X			One sensor per zone will be operational
21-53	Environ Control Panel, Pack Discharge Temp/Supply/Compt Temp Indicator	8	0	X			
21-55	Ram Air Inlet/Exhaust Doors	2	1	X			Inop Ram Air Inlet Door will be wired open. Cargo Cmpt heat will be degraded if door wired open. See TO 1C-17A-00GV-00-1 for information on wiring the doors open.
21-60	Temperature Control		0	X			Auto or manual control. Remote Temp Control Switch may be inop if LM Temp Control is operational
21-61	Trim Air Regulator	2	1	X			These requirements cover the Trim Air Differential Pressure Sensor. Inop valve will be locked closed. All associated equipment will be operational on same side as operational trim air regulator.
21-61	Trim Air Check	3	2	X			Center check valve

	Valve						may be inop
21-61	Trim Air Switch , Flt Deck Overhead Panel	1	0	X			
21-67	L/R Pack DISAG Switch	2	1	X			Operable switch will correspond to operating pack
21-67	Temperature Control Panel, LM Station	1	0	X			Remote Temp Control Switch on ESCP will be operational.
21-91	Environmental System Controller (ESC)	2	2	X	X	X	If one ESC is inop, continue to a station with repair capability.
22/27/34	FLIGHT CONTROLS (AUTO-FLIGHT)						
22-11	Flight Control Computer	4	4	X	X	X	A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7) with one FCC INOP. Both SCEFCs will be operational, no (Pitch, Yaw, Roll, Pitch Trim Fail) Fail Op messages will be illuminated and the FCC PFBIT must be accomplished with in the last 24 hours.
22-10	Auto Pilot Panel	1	1	X			Auto-pilot required per mission requirements
22-11	Pitch AutoPilot Actuator (PAPA)	1	1	X			If PAPA is INOP continue mission to a station with repair capability as long as the FCC PFBIT has been accomplished within the previous 24 hours.
22-11	Alpha Limiter System	1	1	X			

22-11	Air Refueling Mode	1	1	X			Required for A/R missions.
22-12	Roll AutoPilot Actuator (RAPA)	1	1	X			If RAPA is INOP continue mission to a station with repair capability as long as the FCC PFBIT has been accomplished within the previous 24 hours.
22-13	Angle of Attack (AOA) Vanes	6	6	X	X20	X	A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7) with one AOA vane INOP to include AOA Heater INOP. For one time flight both APDMC's have to be operational. Verify that only one AOA vane is INOP by comparing Avionic, EFCS, APDMC Fault List and WAP.
22-18	Electronic Flight Control Axis	5	5	X	X	X	
22-18	Stall Warning System	2	2	X			If one system is INOP, continue mission to a station with repair capability. STALL WARNING INOP will be annunciated when both Stall Systems are INOP.
22-18	Stick Shaker	2	2	X	X19	X	If one stick shaker is INOP, ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
22-18	Ground Proximity Warning System	1	1	X			If inop, TAWS is required. ONE TIME FLIGHT

							MAY BE APPROVED IAW 00-20-1 (par 4.7).
22-31	Auto Throttles	1	0	X			
22-31	TOGA Button	1	1	X	X	X	
22-31	Autothrottle Disengage Switch	1	1	X	X	X	Required for A/R missions.
27-00	Trim Indicators, Aileron, Rudder, Horizontal Stabilizer	1	0	X			MFD indication will be operational.
27-11	Aileron Actuator, Ratio Changer	1	1	X			
27-12	Aileron Trim Actuator	1	1	X			
27-15	Transducer, RVDT, Stick, Roll	4	4	X			4 required for Austere Landing Zone operations.
27-31	Elevator Actuator, Ratio Changer	1	1	X			
27-33	Integrated Flight Control Module, Elevator	4	4	X			
27-38	Transducer, Position, RVDT, Pitch	2	2	X			
27-43	Control Valve, Horizontal Stabilizer	2	2	X			
27-44	Horizontal Stab Pitch Trim Motor, Hydraulic	2	2	X			
27-52	Tandem Control Valve	4	4	X			
27-53	Transducer, Flap Position	4	4	X			
27-53	Indicator, Flap Position	1	0	X			MFD indication will be operational.
27-53	Integrated Flight Control Module (IFCM), Rudder	2	2	X			With the upper IFCM inop, A ONE TIME FLIGHT MAY BE

							APPROVED IAW 00-20-1 (par 4.7). Lower rudder must function.
27-63	Spoiler Control/ Electronic Flap Computer	2	2	X			With 1 inop and 4 FCCs operational, a ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7) provided SCEFC PFBIT was accomplished in the previous 24 hours.
27-63	SCEFCS BLIN Codes		0	X			No more than 1 CAT II PFBIT fault for Home Station, and no more than 2 CAT II PFBIT faults for Enroute departures. CAT II PFBIT BLIN codes are between C50 and FFF. The correct way to identify how many PFBIT CAT II Blin codes are being detected is to run the Hyd and electric PFBITS and then go into Memory Inspect addresses 1D470-1D47E and see how many BLIN codes are stored.
27-63	Switch, Control, Direct Lift (DLC)	2	1	X			
27-65	Indicator, Speed Brake	1	0	X	X1	X	MFD indication will be operational.
27-82	Slat Actuator	16	14	X			One actuator per wing may be inop.
34-45	Terrain Avoidance Warning System	1	1	X			If inop, continue the mission to a station with repair capability.

23	COMMUNICATIONS						
23-11	HF Radios	2	0	X			1 required for flights over water
23-14	AERO-I, Airline Operational Control (AOC), CPDLC	1	0	X			Per Mission Requiremenet
23-14	UHF SATCOM/GPS Antennas	3	0	X			Per Mission Requiremenet
23-15	Comm 1	1	1	X	X	X	
23-15	Comm 2 / UHF / VHF	3	3	X			
23-31	Public Address System	1	1	X	X23	X	
23-51	Control, Intercommunications Set (ICS)	7	4	X			Pilot's, copilot's, forward and aft loadmaster's intercom control sets will be operational.
23-81	Communications Control Unit (CCU)	2	2	X	X25	X	A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
23-81	Comm/Nav Control Panel (CNC)	2	2	X			Pilots CNC must be operational.
24	ELECTRICAL						
24-31	DC Cross Tie	1	1	X	X	X	
24-31	DC BUS TIE Relays	2	2	X	X	X	With one inop and transformer rectifiers operational, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
24-21	Integrated Drive Generators (IDG)	4	3	X	X	X	With two inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
24-24	AC X-TIE	1	1	X	X	X	If inop, continue mission to a repair facility provided 4 IDG's and all AC bus ties are

							operational. If operating with 3 IDG's or any AC bus tie is failed, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (para 4.7).
24-24	AC BUS TIE Relays	1	1	X	X	X	With one inop and all IDGs operational, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7). On mission with ATGL or DVM, all 4 IDGs must be available.
24-31	Transformer Rectifiers	4	3	X	X9	X	DC X-TIE and both DC Bus Ties will be operational.
24	EMERGENCY POWER GENERATION						
24-26	60hz Power Supply System	1	1	X	X8	X	
24-31	Loadmaster Bus 1	1	1	X			
24-31	Loadmaster Bus 4	1	1	X			
24-32	Batteries	2	2	X	X	X	
24-32	Battery Chargers	2	2	X			
24-40	External Power	1	1	X	X7	X	APU generator shall be operational. External power is required for Aeromedical Evacuation Mission.
24-61	Static Inverter	1	1	X	X	X	
24-62	Emergency Power Relays	2	2	X			
24-61	Transfer Buses	2	2	X	X	X	
25/38	EQUIPMENT AND FURNISHINGS						
25-40	Lavatory	1	1	X			Continue mission (if practical) to a facility with repair capability. Can be

							inop with comfort pallet onboard.
26	FIRE PROTECTIONS						
26-11	Fire Detection System, Engine	4	4	X	X16	X	Either loop A or B for each engine will be operational.
26-12	APU Fire Detection Sys	1	1	X			Either loop A or B will be operational. If inop the APU may not be used.
26-13	Smoke Detector, Cargo Compartment	14	6	X	X17	X	Sensors 9, 10, 13 & 14 plus two others will be operable.
26-14	Lavatory Smoke Detector	1	0	X			
26-15	Crew Rest Smoke Detector	1	0	X			
26-17	Avionics Smoke Detector	2	1	X			
26-17	IRU Smoke Detector	4	4	X			Corresponding IRU must be deactivated.
26-21	Fire Bottle, Engine	4	4	X	X	X	A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7). For expired bottles see TO 00-20-1 table 6-1.
26-22	Fire Bottle, APU	1	1	X			If inop then APU may not be used. For expired bottles see TO 00-20-1 table 6-1.
28	FUEL						
28-12	Valve Assembly, Solenoid, Fuel Vent, Override	2	0	X			Primary and secondary climb/dive valve will be operational.
28-12	Valve Assy, Secondary Climb/Dive	2	0	X			Primary climb/dive valve and override solenoid valve will be operational.
28-12	Valve Assy, Primary	2	0	X			Secondary climb/dive

	Climb/Dive						valve,override solenoid valve, and fueltank pressure transducer will be fully operational.
28-13	Transfer Pumps, Wing Tanks	4	2	X			If fuel quantity in tank 2 or 3 is greater than 36K lbs, respective XFER pump will be operational. One transfer pump/switch per wing may be inop; tank with inop pump will have both boost pumps and crossfeed valve operational.
28-13	Transfer Pump, E/R Tanks	4	0	X			For Extended Range missions, 1 pump required per side.
28-13	Separation Valve	1	0	X			If failed closed, both A/R isolation valves will be operable and both ground refuel receptacles must be operational.
28-21	Receptacle, Ground Refueling	2	1	X			Seperation valve and the left or right ground refuel switch on the overhead panel must be operational.
28-21	Panel, Control, Ground Refueling	1	1	X			Left or Right ground refuel switch on the overhead refuel panel and seperation valve must be operational.
28-21	Valve, Isolation, Ground Refueling	2	0	X			Inop valve will be closed manually prior to takeoff
28-21	Fill Valve	4	4	X			Four required for A/R missions. Fill valves 1 and 4 will be operational. Over

							wing refueling is required for affected tanks.
28-21	Hi-Level Shutoff Test Valve	4	4	X			Four required for A/R missions. Quantity Select method required for ground refueling.
28-21	Ground Refuel Switch, Overhead Panel	2	0	X			Ground Refuel Panel will be operational
28-22	Boost Pumps	8	6	X			One per wing may be inop if inboard transfer pumps and crossfeed valves are operational on affected side. Excludes Boost Pumps, E/R Aircraft
28-22	Crossfeed Valves	4	4	X			
28-22	Fuel Manifold Drain & Check Valves & Pump	1	1	X			May be inop but manifold must stay dry and have manifold drain capability
28-24	Valve, Drain, Manual, Ground Refueling	1	1	X			
28-31	Dump Valves	2	2	X			Left and Right Master, or Center separation valve, will be operational.
28-31	Low-Level Fuel Dump Shutoff	4	4	X			
28-40	Fuel Quantity Probes			X			One probe per tank may be inop. No more than four probes per aircraft. Densitometers, high level sensors, and compensators are not considered probes and should be statused based on the system malfunctions

							they cause.
28-41	Fuel Quantity Display, Overhead Panel	4	4	X			Total Fuel Quantity Display must be operational with any single overhead fuel quantity display inop. Erratic/Eronneous/ or fluctuating indication is considered inop.
28-41	Total Fuel Quantity Indicator	1	1	X			Total Fuel Quantity Display must be operational with any single overhead fuel quantity display inop.
28-41	Fuel Quantity Computer	1	1	X			With one channel inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
28-50	UARRSI System	1	1	X			Required for A/R missions.
28-51	Door Assembly & Handle, UARRSI	1	0	X			Door will be verified open before flight for A/R missions.
28-51	Air Refuel Master Valves	2	0	X			Inop valve will be manually closed prior to takeoff. With any inop valve, the center separation valve will be operable. One required for A/R missions.
28-52	Dimming Unit, A/R Annunciator	1	1	X			Required for night A/R missions.
28-52	Annunciator Lights, READY, DISC. & LATCHED, Center Post	1	0	X			For A/R missions READY light may be inop if overhead panel READY light is operational.
28-52	Rheostat, Air Refuel Ann/Slipway,	1	0	X			Required for night A/R missions.

	Overhead Panel						
28-52	Switch, L/R Master, DISAG, Air Refuel, Overhead Panel	2	1	X			Separation valve will be operable. Inop valves will be closed prior to takeoff. Required for A/R missions.
28-52	Switch, A/R Amp Override, Overhead Panel	1	0	X			Required if Override Boom Latching authorized by mission directive
29	HYDRAULICS						
29-11	Engine Driven Hydraulic Pumps	8	8	X			Only one pump per system may be inop. Only one pump in systems #2 and #3 combined may be inop. The auxiliary pump, and transfer pump for systems #2 and #3, for affected system will be operational. If a pump fails to depressurize, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
29-12	Hydraulic System Control Panel	1	1	X			If HSP is SINGLE (one channel is lost), A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
29-12	Hydraulic System Controllers	2	2	X			
29-21	Auxiliary Pumps	4	4	X			If the failed pump is on #2 or #3 system the transfer pump will be operational. If failed pump is on #1 or #4, A ONE TIME FLIGHT

							MAY BE APPROVED IAW 00-20-1 (par 4.7).
29-22	Transfer Pump	1	1	X			If inop, all system #2 and #3 (engine driven and auxiliary) pumps will be operational
29-23	Ram Air Turbine	1	1	X			
29-32	Hyd quantity transducer	4	0	X			Associated system reservoir low quantity prox sensor required. Frequent visual check of reservoir sight gages for adequate fluid level is recommended.
29-32	Hydraulic Resvr Low Quantity Prox Sensors	4	4	X			May be inop on systems #1 or #4 only. Associated system reservoir hydraulic quantity transducer required.
30/34	ICE AND RAIN PROTECTION						
30-11	Wing Ice Protection System (Includes valves, cockpit switch, temp sensor)	2	2	X			Will be operational for flights into known or forecast icing. Failed valve will be locked closed.
30-21	Engine Anti-Ice Systems (Includes valves, cockpit switches, temp sensors)	4	4	X			Will be operational for flights into known or forecast icing. If icing is anticipated, manually open Shutoff Valve IAW Tech Data after associated engine has been started.
30-30	Air Data Sensor Heating	18	18	X			Will be operational for flights into known or forecast

							icing.
30-41	Windshield Ice Protection	2	2	X			Will be operational for flights into known or forecast icing.
30-42	Window Defog Control Box	1	1	X			
30-42	Windshield (Front)	2	2	X			
30-42	Sliding	2	2	X			
30-42	Sideview	2	0	X			
30-42	Downview	2	0	X			
30-42	Eyebrow	2	0	X			
30-43	Windshield Wipers	2	2	X			Required for flight through rain.
30-81	Ice Detector Probe	1	1	X			
30-81	Low Temp Cowl Ice Protection Sensor	4	4	X			Will be operational for flights into known or forecast icing.
34-16	TAT Heater	2	2	X			A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7). Authorized provided all ADCs are operational. Flight through icing conditions is not authorized.
31/23/25	INDICATING SYSTEMS						
23-71	Cockpit Voice Recorder (CVR)	1	1	X			If inop, continue the mission to a station with repair capability, provided the FDR is operating.
25-67	ELT	1	1	X			If inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
31-31	Underwater Beacon	1	1	X			

31-31	Single Flight Data Recorder (FDR)	1	1	X			If inop, continue the mission to a station with repair capability, provided the CVR is operating. A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
31-33	Quick Access recorder (QAR)	1	1	X			If inop, continue the mission to a station with repair capability.
31-43	Proximity Sensor Interface Unit (PSDAU, PIU)	2	2	X			
31-51	Central Aural Warning Computer	1	1	X			
31-51	Loudspeaker, CAWS	2	1	X			
31-52	Warning and Caution Computer - WCC	2	2	X			
31-52	Annunciator, Lighted, WACS Fail	2	0	X			
31-52	Switch, Master Warning & Reset	2	1	X	X18	X	
31-52	Switch, Master Caution & Reset	2	1	X	X18	X	
31-52	Warning Annunciator Panel	1	1	X			
32	LANDING GEAR AND BRAKES						
32-00	Landing Gear	5	5				* For inclusion in RSP must be on MESL
32-41	Wheel & Tire Assy, Main Gear	12	12	X			
32-42	Wheel & Tire Assy, Nose Gear	2	2				

32-43	Multiple Disk Brakes	12	12	X			A brake worn beyond limits does not automatically require deactivation. If deactivation is required for any reason, then one brake/hose per side may be deactivated and no more than two brakes may be deactivated on the ACFT at one time per 32GS Hydraulic Brake Deactivation Procedures.
32-44	Brake Accumulator	2	2	X			
32-44	Parking Brake	2	2	X			With one inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
32-45	Control Unit, Anti-skid-Brake Temp Monitor	1	1	X			
32-45	Anti-Skid Braking	1	1	X			
32-45	Transducer, Motional Pickup, Wheel Speed, MLG	12	12	X			Brakes (7 or 8) and (11 or 12) transducers will be operational. Brake on affected wheel will be deactivated.
32-46	Sensor, Temperature, Brake Monitor	12	8	X			One sensor per bogie may be inop.
32-47	Indicator, Brake Pressure, Cockpit	1	1	X			
32-51	Nose wheel Steering Control (Tiller)	2	2	X			With one inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
32-52	Steering	2	2	X			

	Cylinder Assembly						
32-61	Landing Gear Indicators	2	2	X			Accurate gear indication will be available on either CFG page or landing gear control indication panel. With one inop continue mission to a station with repair capability
33	LIGHTING						
33-10	Flight Compartment Lighting	1	1	X			Main inst panel floodlight, cockpit dome and thunderstorm lights will be operational for night flight.
33-28	Light and Buttons, Nurse Call	2	0	X			Will be operable for Aeromedical Evacuation missions
33-41	Wingtip Landing Lights, Overt	2	2	X			One wingtip or nose landing light on each side will be operational. For NVG landings with the legacy lighting system, both wingtip landing lights will be operational with IR lens covers installed.
33-42	Nose Landing Light, Overt	2	2	X			
33-42	Nose Taxi Light	2	1	X	X11	X11	One may be inop provided the nose landing light on the same side is operational. Not required if mission conducted during daylight hours.
33-42	Overt Runway Turnoff Light / Covert Runway Turnoff Light	2/2	0	X			

33-44	Wingtip Navigation Lamp, Fwd Position	4	4	X	X12	X12	One lamp per wing will be operational.
33-44	Wingtip Navigation Lamp, Aft Position	4	4	X	X12	X12	One position light lamp per wing will be operational.
33-45	Upper & Lower Anti-Collision Light	2	2	X	X13	X13	For SPRO ops, lower light will be removed. Upper light must be operational. If either the upper or lower light is inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
33-47	Wing Tip (Strobe) Recognition Lights	4	0	X			
33-48	Tailcone In-Trail Light	2	0	X			One required for night formation flight.
33-48	Wing In-Trail Light	2	0	X	X10	X10	Two required for night formation flight. Wing tip position lights can be used as an alternate for training only.
33-48	Fuselage In-Trail Light	2	0	X	X10	X10	Two required for night formation flight.
33-49	A/R Flood Light	1	1	X			Required for night A/R.
33-49	UARRSI Perimeter Light Panel	3	3	X			Required for night A/R.
33-51	Emergency Exit Signs	13	13	X			
33-51	Emergency Exit Lighting Systems	3	3	X	X	X	

33-51	Emergency Lighting, Battery Power Supply	3	3	X			
33-61	UARRSI Slipway Light	4	4	X			Must be operational for night A/R missions.
33-41	Winglet Covert IR Retractable Landing Lights	2	0	X			For NVG landings using Combat Lighting equipped aircraft, both IR wingtip lights will be operational.
34/31	NAVIGATION SYSTEMS						
31-61	MFC	2	2	X	X	X	
34-11	Pitot Static Probes	4	4	X	X	X	Upper left (1A) and upper right (2B) probes will be operational to provide standby pitot static instruments. All operative ADC channels will have operable corresponding probes. Corresponding probe heaters must be operational for flights into known icing conditions.
34-12	Standby Altimeter Airspeed Indicator	2	2	X			Pilot will have a full set of standby indicators. Altimeter set function will be operational on both.
34-16	Air Data Computer Channels	4	4	X	X	X	A singe ADC channel may be inoperative to include a plumbing leak.
34-21	Bearing Distance and Heading Indicator	2	2	X			Pilot will have a full set of standby indicators.

34-25	HUD	2	2	X	X22	X	5 of 6 displays (HUD/MFDs) will be operational. 2 req'd for ALZ/NVG.
34-28	Standby Attitude Indicator	2	2	X			Pilot will have a full set of standby indicators.
34-41	Weather RADAR	1	1	X	X28	X	Required when thunderstorms are forecast for the planned route of flight or for AR when TCAS is inop.
34-42	RADAR Altimeter	2	1	X	X29	X	
34-43	IRUs and Batteries	4	4	X			Position 1 and 4 must be operational
34-43	Military Global Positioning System (MGPS)	2	1	X	X27	X	May only be inoperative if CGPS is installed/operational and APS-150 Wx Radar not installed/required and FFS not required.
34-43	Commercial GPS	2	1	X	X27	X	As required for ATC airspace restrictions. Both may be inop if Military GPS is operational.
34-44	TCAS	1	1	X	X24	X	A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7), Unless ATC airspace mandates TCAS functionality.
34-46	SKE/FFS	1	0	X			As required for mission accomplishment
34-51	PLSR 1/2	2	2	X	X26	X	With 1 PLSR inop, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).

34-51	LF/ADF	1	0	X			As required for mission accomplishment
34-52	DME 1/2	2	1	X			
34-53	TACAN	1	1	X			As required for mission accomplishment
34-54	IFF	1	1	X	X		Mode 1, 2, 4, may be inop based on mission/airspace requirements.
34-62	Core Integrated Processor	2	2	X	X	X	
34-62	MCD	4	4	X			Exception: 5th position is required for SOLL II mission
34-62	Data Entry Keyboard (MCK)	2	2	X			Exception: 3rd position is required for SOLL II mission
34-62	MFD	4	4	X	X21	X	5 of 6 displays (HUD/MFDs) will be operational.
35	OXYGEN						
35-11	25 liter Crew LOX Converter	1	1	X	X	X	May be inop if PAX and/or auxiliary system and crossfeed are operational.
35-12	Regulators	10	3	X	X14	X14	Pilot, co-pilot, loadmaster regulators will be operational. Other regulator(s) required for each occupied crewmember position.
35-21	75 liter PAX LOX Converter	1	1	X			May be inop if AUX and crossfeed are operational.
35-21	75 liter AUX Converter	1	1	X	X	X	May be inop if PAX system is operational.
35-31	Portable Oxygen Bottles	10	10	X	X14 a	X14 a	Two minimum required for each primary crewmember.

35-31	Quick Don Mask	15	15	X	X15	X15	Required for 3 primary crewmembers.
36/47	BLEED AIR						
36-12	Engine SOVs	4	4	X			One SOV per wing may be failed closed provided flight is not conducted into known or forecast icing conditions. Any aircraft with a SOV Failed in the OPEN position will be considered NMC. All components will be functioning on the operational bleed system.
36-14	Pneumatic Ground Service Connector	2	0	X			APU required if ground service connector inop.
36-15	Wing Isolation Valve	1	1	X			May be manually closed after engine start. If manually closed, two bleed sources required for each operating pack.
36-23	Cowl Ice Prot Burst Duct Differential Press Switch	8	8	X			One per engine will be operable.
36-23	Wing Ice Prot Burst Duct Differential Pressure Switch	4	4	X			One per wing will be operable.
36-23	Manifold Failure Detector Controller (MFDC)	1	1	X	X	X	Manifold Detect indication warns of a loss of detection capability for a region(s). Ensure all regions have monitoring capability prior to flight. Manifold Fail indication warns of a possible duct

							rupture. Ensure integrity of all Bleed Air Ducting and ensure all regions have monitoring capability prior to flight.
40/41	CARGO MISSION SYSTEMS (AIRLAND)						
40-11	Aircrew Data Transfer Device	1	1	X			Shall be operational if upload of Worldwide Navigation Database (WWNDB) and Terrain Avoidance Warning System (TAWS) is required during scheduled mission duration.
41-10	Cargo Rail and Locks (ADS and Logistic)		0	X			**Home Station Departure:** All rails, locks, vertical lips and roller conveyors (ADS and logistic) will be fully operational. **En route:** A minimum of one lock per pallet per side is required for airland pallets/platforms.
41-12	Ramp Toes	4	4	X			Will have both stowage pins in each toe. At least one of the ramp toes requires an operational proximity sensor. May have less than 4 operational toes if not needed for mission accomplishment.
41-22	Cargo Loading Stabilizer Struts	2	2	X			Required to integrally jack the ACFT. Mission may continue if struts are

							not needed for mission accomplishment. Continue to a station with repair capability.
41-24	Cargo Winch	1	1	X			Mission may continue if winch is not needed for mission accomplishment.
41/52	CARGO MISSION SYSTEMS						
41-00	Ramp Edge Covers	1	1	X			Required for equipment airdrop
41-14	Roller Conveyor Release Latches		0	X			Airdrop prohibited if release latch in load path is missing, damaged, safety wired, and/or taped to the cargo floor.
41-17	Left Rail Bridge Assembly	1	1	X			Left rail bridge assembly required for equipment drop
41-31	Buffer Stop Assembly	1	1	X			Required when dropping CDS > 9400 lbs.
41-31	Gate Release Mechanism	6	6	X			As required for CDS airdrop
41-41	Paratrooper Retrieval Systems	2	2	X			As required for personnel airdrop
41-42	Retrieval Winches	2	2	X			As required for CDS or personnel airdrop
41-43	Tow Release Mechanism	1	1	X			Required for equipment airdrop
41-54	Aerial Delivery System Controller	1	1	X			All associated components for airdrop are required
52-13	Troop Doors	2	2	X			As required for personnel airdrop
52-14	Troop Door Air Deflector/Troop Door Fairings	2	2	X			As required for personnel airdrop
47	OBIGGS						
47-00	OBIGGS Systems	2	2	X	X	X	As required for mission tasking and

							tank inerting requirements.
52/53	DOORS						
52-00	Hor/Vert Stab Access, Crew Oxygen, Belly Maintenance Door, Maintenance Ditching Hatch Proximity Indicating Systems		0	X			May be inop if the door is visually verified closed and locked.
52-11	Crew Entrance Door	1	1	X	X2	X	Indicating systems will be operational.
52-13	Paratroop Doors Indicating System	2	0	X			Indicating system shall be operational
52-14	Air Deflector Doors Indicating System	2	0	X			Indicating system shall be operational
52-20	Emergency Exit Door	1	1	X			Indicating systems will be operational.
52-31	Cargo Door Downlock Assemblies	2	2	X			
52-31	Cargo Door Ditching Locks	4	4	X			Manual operation permissible to continue the mission to a repair facility, unless aeromed or airdrop.
52-31	Cargo Door Uplocks	2	2	X			
52-32	Cargo Door/Ramp Proximity Indicating Systems		0	X			All proximity sensors and indicating systems affecting the ADSC, LFCP, LACP, and PADS will be operational for airdrop missions. All proximity sensors and indicating systems associated with the cargo door

							and ramp system will be operational. May be inop on unpressurized flights if it can be determined that the locks are positively locked. But, with palletized cargo on board, all door/ramp locks are required to permit cargo jettison.
52-32	Cargo Ramp Latches	22	22	X			All cargo ramp latches will be operational. Manual operation permissible, unless aeromed or airdrop.
52-32	Cargo Ramp Locks	2	2	X			All cargo ramp electrical safety locks will be operational. Manual operation permissible, unless aeromed or airdrop.
53-14	Sidewall Jamb Spindles	34	34	X			
70/49/73-75/77-80	ENGINES/APU						
72-00	Engine	4	4				* For inclusion in RSP must be on MESL
31-41	A/PDMC	2	2	X			
49-10	APU	1	1		X3	X	Must be operational for mission departures to areas without electrical/air sources when engine shutdown is planned.
73-21	EEC	4	4	X	X4	X	One channel (A or B) may be inop. If channel A is inop, engine will operate in N1 mode. Continue mission to

							a station with repair capability.
74-00	Ignition System	8	8	X			CH B may be inop. If only 1 engine has CH A inopX, A ONE TIME FLIGHT MAY BE APPROVED IAW 00-20-1 (par 4.7).
77-41	Standby Engine Display (SED)	1	1	X			
78-30	Thrust Reversers	4	2	X	X	X	Inop TRs will be locked out for flight IAW Tech Data. All TRs required for SAAF.
79-21	Oil Temperature Indication System	4	4	X			
79-31	Oil Quantity Transmitter	4	0	X			Verify oil quantity prior to flight.
79-33	Low Oil Pressure Indication	4	4	X			
80-11	Starter Control Valve	4	4	X			Starter control valve will be operable manually. For manual operation, starter position indicator must be operable.
93	DEFENSIVE SYSTEMS						
93-12	Missile Warning System	1	0	X			As required per mission requirements. MWS may be inop if LAIRCM and CMDS are operational (mission/threat dependent).
93-14	LAIRCM	1	0	X			As required per mission requirements. LAIRCM may be

							inop if MWS and CMDS are operational (mission/threat dependent).
93-30	CMDS	1	0	X			As required per mission requirements
95/25/26	EMERGENCY EQUIPMENT						
25-61	Crash Axes	2	2	X			
26-12	Warning Horn	4	2	X			One Cargo Bay and one underfloor Warning Horn must be operational
26-23	Fire Extinguishers	9	9	X			
95-23	FEDS Life Rafts (includes Retractor Assembly and Ladders)	3	0	X			Raft quantity will be adequate to accommodate mission requirements.
95-23	FEDS Initiators	7	7	X			
95-31	Ramp Blow Down System	1	1	X			Required for Aeromedical Evacuation Missions

Table 2.2. Qualifying Notes.

1.	Required only if MFD(s) is (are) inoperative.
2.	Not required for Ferry or Flight Test if door can be secured closed.
3.	(a) Short/austere operations may not be initiated without an APU. If APU fails to start after landing, do not shut down all engines unless ground power availability exists. (b) APU required for engine start if ground power and air is not available. APU required for deployment location that does not have ground power and air.
4.	Item has primary and secondary channels. One channel of one EEC per Aircraft may be inoperative.
5.	(a) Differential pressure indicator not required if cabin altitude indicator and rate of change indicator are operative. (b) Both required for precision landing and/or wind shear testing.
6.	Comply with directive for unpressurized flight mission.
7.	Austere operations may not be initiated without an APU generator. If APU fails to engage after landing, do not shut down all engines unless ground power availability exists.
8.	Required for Flight Test data system power.
9.	Short austere airfield operations, 3 of 4 must be operational.
10.	(a) Required for short/austere airfield taxi. (b) If associated nose taxi lights are operative, the side light is not required. (c) Not required for day operations.
11.	Required if wing tip landing/taxi lights are inop.
12.	One lamp per assembly must operate.
13.	(a) One lamp on each unit (either red or white) must be operable. (b) Lower beacon not required for short/austere airfield landing
14.	(a) Must be operable at each occupied station. (b) Minimum 4 (P, CP, FTE, & LM).
15.	Required for on-board passengers.
16.	Only one loop A or loop B light/detector assembly for one engine may be inoperative.
17.	Overhead smoke detector panel must be operational.
18.	Only one is required.
19.	Not required for high alpha flight test.
20.	If less than 5 transmitters are available, turn off ALS and restrict the flight envelope. With ALS off, APDMC needs pair of designated AOA sensors - either 1L and 6R or 5L and 2R.
21.	(a) If MFD-1 is inop, then HUD-1, MFD-2, and MFD-3 must be operable (good). (b) If MFD-2 is inop, then HUD-1, MFD-1, and MFD-3 must be good. (c) If MFD-3 is inop, then HUD-2, MFD-2, and MFD-4 must be good. (d) If MFD-4 is inop, then HUD-2, MFD-2, and MFD-3 must be good.
22.	(a) If HUD-1 is bad, then MFD-1, 2, & 3 must be operative. If HUD-2 is bad, then MFD-2, 3, & 4 must be operative. (b) Both required for precision landing and/or wind shear testing.
23.	(a) None required if both crew and cordless headsets are operative and no passengers on board. (b) One in flight station and one in cargo compartment required.
24.	Required if flying a FANS flight plan, otherwise not required.
25.	Only one required, one CNC can control everything for local flights.
26.	(a) One VOR/LOC and one glide slope receiver for IMC flying conditions. (b) Two

	VOR/LOC and two glide slope receivers required for Cat II, not required for VFR approach.
27.	Both required only if full navigation system capability required.
28.	Required only if flight planned into known or forecast thunderstorm activity.
29.	Pilot performing maneuvers must have operative system or operative avionics switching function.

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Director of Logistics, Civil Engineering and Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 11-202, Volume 3, *General Flight Rules*, 7 Nov 2014

AFI 11-218, *Aircraft Operations and Movement on the Ground*, 28 Oct 2011

AFI 21-101, *Aircraft and Equipment Maintenance Management*, 21 May 2015

AFI 21-103, *Equipment Inventory, Status and Utilization Reporting,* 26 Jan 2012

AFI 33-360, *Publications and Forms Management*, 1 Dec 2015

AFMAN 33-363, *Management of Records,* 1 Mar 2008

AFPD 21-1, *Air and Space Maintenance*, 29 Oct 2015

Prescribed Forms

There are no prescribed forms for this publication

Adopted Forms

AF Form 847, *Recommendation for Change of Publication,* 22 Sep 2009

Abbreviations and Acronyms

A/PDMC—Aircraft/Propulsion Data Management Computer

AC—Air Conditioning

ACMI—Air Combat Maneuvering Instrumentation

AFCS—Automatic Flight Control System

AFMC—Air Force Materiel Command

AHHS—Automatic Hover Hold System

AOA—Angle of Attack

APU—Auxiliary Power Unit

ARIP—Air Refueling Initial Point

AVTR—Audio or Video Tape Recorders

BSL—Basic Systems List

CARA—Combined Altitude Radar Altimeter

CDS—Container Delivery System

CFT—Conformal Fuel Tank

CMDS—Countermeasure Dispensing System

CNC—Communication Navigation Control

CNI—Communication Navigation Indication

CSAR—Combat Search and Rescue

DOC—Design Operational Capability

DTE—Developmental Test and Evaluation

DTS—Developmental Test Support

ECM—Electronic Counter Measures

EEC—Electronic Engine Control

EFCS—Electronic Flight Control System

EFQI—Enhanced Fuel Quantity Indicating

EGI—Global Positioning System

ELMO—Electronic Map Ordering

ELT—Emergency Locator Transmitter

EMI—Electromagnetic Interference

ESCP—Environmental System Control Panel

FDR—Flight Data Recorder

FEDS—Flotation Equipment Deployment System

FLIR—Forward-looking Infrared Radar

EW—Electronic Warfare

FMC—Full Mission Capable

FSL—Full Systems List

HUD—Heads-Up Display

GINS—Global Positioning Inertial Navigation System

GPS—Global Positioning System

IAW—In Accordance With

IFF—Identification Friend or Foe

ILS—Instrument Landing System

IMT—Information Management Tool

INS—Inertial Navigation System

IRU—Inertial Reference Unit

JHMCS—Joint Helmet Mounted Cueing System

LAIRCM—Large Aircraft Infrared Countermeasures

LANTIRN—Low-Altitude Navigation and Targeting Infrared for Night

LO—Low Observable

LOX—Liquid Oxygen

MDS—Mission Design Series

MESL—Minimum Essential Subsystem List

MFD—Multi Function Display

MLD—Missile Launch Detector

MPCD—Multi-Purpose Color Display

NAV—Navigation

NMC—Non-Mission Capable

OBIGGS—Onboard Inert Gas Generating System

OPR—Office of Primary Responsibility

PMC—Partial Mission Capable

RCS—Radar Cross-Section

RLG—Inertial Navigation System

SAS—Signature Assessment System

SATCOM—Satellite Communication

SKE—Station Keeping Equipment

TACAN—Tactical Air Control and Navigation

TAWS—Terrain Avoidance Warning System

TCAS—Traffic Collision Avoidance System

TCTO—Time Compliance Technical order

TNG—Training

TOD—Technical Order Data

UARRSI—Universal Aerial Refueling Receptacle Slipway Installation

UHF—Ultra High Frequency

VHF—Very High Frequency

VOR—VHF Omnidirectional Range

VSD—Vertical Situation Display

WUC—Work Unit Code